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MISCELLANEOUS NOTES ON ZOOLOGICAL INSTITUTIONS RECENTLY VISITED IN EUROPE.

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THE following notes on some of the Zoological Gardens, Museums, and Aquariums, which I have visited while on leave in Europe during the last three years, may be of interest, both as a sort of guide to other travelling zoologists (the ordinary guide-books give little information on our subject), and to record a few interesting facts about animals in captivity.

The towns I propose to mention in this series of notes are:—1. Birmingham. 2. Brighton. 3. Brunn am Gebirge. 4. Cologne. 5. Halifax. 6. London. 7. Lyons. 8. Marseilles. 9. Munich. 10. Naples. 11. Paris. 12. Southampton. 13. Stuttgart. 14. Vienna.

1. BIRMINGHAM, ENGLAND.

(i) *Zoological Gardens.*

Several “Zoological Gardens” have existed for short periods in the district of Birmingham.* In 1870 an attempt was made to form a Midland Zoological Society, with gardens and a menagerie at Birmingham, but apparently nothing was actually done.

In May, 1873, the late Morris Roberts, the ex-prizefighter, opened a menagerie in the grounds of the Sherbourne Hotel,

* *Vide ‘Birmingham Post’ and ‘Birmingham Mail’;* both of February 16th, 1910.

Balsall Heath, but three years later the collection was dispersed. There were also "Zoological Gardens" at Aston Lower Grounds and Sutton Park.

In 1910 a new collection of live animals was started in the Botanical Gardens at Edgbaston, the property of the Birmingham Botanical and Horticultural Society.

This Society was founded in 1829, and their gardens, planned by J. C. Loudon, were opened in 1831. Lately the annual cost of maintenance has been about £1600, and the subscriptions under £1000, so the Society are making the experiment of adding a menagerie to attract more visitors to their grounds.

These really beautiful gardens are on the slope of a hill, the highest portion of the ground (near the entrance gate) being occupied by some artificially heated glasshouses, in which the reptiles are kept. The most attractive part of the institution is the "Hugh Nettlefold Alpine Garden," opened May 29th, 1895. When I visited Birmingham early in July, 1910, the animals already installed in the collection were five African Monkeys, representing three species, three Black Lemurs, some Grey Squirrels, fourteen or fifteen species of birds, several Tortoises, one medium-sized Alligator, a small Crocodile, seven (or more) species of Lizards, including some nice specimens of an *Agama*, four (or more) species of Snakes, including a *Boa constrictor*, and also a few Batrachians. Various cages in process of construction gave promise of a larger stock being on exhibition before long.

(ii) *Museum.*

A new Zoological Museum for Birmingham is proposed, and when visiting that city in July, 1910, I was told that the buildings were already in course of construction, and the collection meanwhile housed at Aston Hall, which I accordingly visited and very much enjoyed, but it must be confessed that the interests and beauties of the building exceeded those of the specimens that it contained.

Sir Thomas Holte (1571-1654) began the building of Aston Hall in 1618, but it was not entirely completed until 1685. The Hall now belongs to the city of Birmingham, and is open free to the public daily.

The Natural History collections are chiefly exhibited in



rooms Nos. 2 and 3 on the ground floor, and Nos. 16 to 19 on the first floor.

In room No. 2 is a case containing two Cranes (*Grus cinerea*), shot at Knowle, in Warwickshire, Dec. 1st, 1903, and mounted by Mr. E. F. Spicer, of Birmingham.

A 'Handbook to the Collection of British Birds in Aston Hall,' written by Prof. T. W. Bridge, F.R.S., was published in 1908, on page 12, of which we read:—"The British birds here exhibited originally formed part of the Natural History Museum of the Queen's College, but were presented to the City by the Council of that Institution. Unfortunately there exists no accurate record of the precise locality from which the specimens have been obtained, and hence it cannot be positively affirmed in all cases that they are really British."

2. BRIGHTON, ENGLAND.

(i) *Aquarium.*

When visiting Europe in 1905 and 1907, to see the principal zoological gardens and aquariums,* I proposed going to Brighton to inspect the aquarium, which I had not seen since about 1883, but was assured by several zoologists that this once famous institution was a thing of the past. "There is nothing to see there now," was the refrain.

However, in October, 1909, I went for a short holiday to Brighton, and was delighted to find that the Aquarium contained a large and most interesting collection; only excelled in Europe by that of Amsterdam. The following list gives a comparative idea of the size of the Brighton collection of fish compared to other important European aquariums that I have visited during the last four years:—

Amsterdam	...	...	...	80 species of fish seen.
Brighton	...	...	...	54 "
Berlin	...	...	...	52 "
Naples	...	...	...	40 to 47 "
Stibbington Hall (Capt. Vipan's)	...	...	44	" "
Blackpool	...	...	...	34 "
Hamburg	...	...	...	about 30 "

* See 'Report on Mission to Europe, 1905,' and 'Notes on Zoological Collections visited in Europe, 1907,' both published by the Egyptian Government Zoological Gardens.

The Brighton Aquarium has had a chequered career; the original cost of the building is stated to have been over £130,000, it was opened in 1872. In 1900 the Aquarium and its contents were purchased by the municipality for £80,000. The Corporation took possession in 1901, and soon after leased the building to a private company, but resumed occupancy in 1906. It is now open daily to the public at a small charge.

The Superintendent at the time of my visit was Mr. E. W. Cowley, and the Keeper Mr. F. B. Brown, who has had so many years' practical experience of the management of fish and other aquatic animals in captivity.

There is no need in this paper to describe the building or the system of water supply, but the large size of some of the tanks should be noted, especially No. 6, which is said to be 110 ft. (or 33.58 metres) long, and capable of holding 110,000 gallons (or 500,060 litres) of water.

The collection of live animals is by no means restricted to fish, and deserves longer notice.

The Mammals consisted of fifteen Monkeys, representing three African and three Asiatic species, a curiously coloured Bear, which Mr. Brown told me has now lived for over twenty years here, and four Seals (*Phoca vitulina*), one of which was remarkably tame.

Of Birds there were Guillemots and representatives of two species of Sea-Gulls.

Besides one small Alligator-Terrapin, nineteen European Pond-Tortoises, and one small and one medium-sized Alligator, the Reptile collection contained two noteworthy individual animals. First, a Snapping Turtle (*Macroclemyx temmincki*) of enormous size (in Tank No. 20), which Mr. Brown told me has lived in the Brighton Aquarium since about 1879, thus about rivalling in age the old Snapper of the same species in the Amsterdam Zoological Gardens. Secondly, a Mississippi Alligator, now about eight feet in length (in Tank No. 18), which was received here in 1877 when but fifteen inches long, so almost as old as the celebrated Alligator "Old Dick," which arrived in Regent's Park in 1876, and which still flourishes there.*

* "Old Dick" died June 8th, 1911

Of Batrachians there were a few white Axolotls, labelled as bred here, and representatives of two species of Newts.

I counted fifty-four species of fishes living in the Brighton Aquarium, twenty-three of these were in fresh water and thirty-one in salt water. Of the former, three Sterlets (*Acipenser ruthenus*) should be specially mentioned; these are the survivors of nine specimens imported from Russia in 1873, so that at the time of my visit (1909) these three fish were at least thirty-six years old, thus even older than Capt. J. A. M. Vipan's Sterlets in his private aquarium at Stibbington Hall, which were given to him by the Czar of Russia in 1888, and also of the four Sterlets which I saw in the Amsterdam Aquarium in 1907, which had then lived twenty-five years there. Among the sea fish I was very interested to see three individuals of the Monk Fish (*Rhina squatina*), the largest being perhaps four feet in length. There was a shoal of Herrings (*Clupea harengus*) in Tank No. 32, and some Mackerel (*Scomber scombrus*) in Tank No. 37; Mr. Brown told me that individuals of both these species have lived from three to four years in captivity here.

The most remarkable exhibits among the Crustacea were perhaps a Red Lobster in Tank No. 10, and a very large Edible Crab in Tank No. 30.

The Cephalopoda were well represented by thirteen fine, lively specimens of the Octopus (*Octopus vulgaris*), nineteen of the Squid (*Loligo vulgaris*) (the shoal of Squids in Tank No. 40 formed a very attractive exhibition), and two of the Cuttlefish (*Sepia officinalis*).

Tanks Nos. 1, 31, 32, and a table tank contained Sea Anemones. The other invertebrate animals in the collection call for no special remarks.

(ii) *Museum.*

The Booth Museum of British Birds on the Dyke Road, Brighton, is too well known to require any description in the pages of 'The Zoologist,' but I would like to devote a few paragraphs to call attention to the Brighton Museum, as I have been surprised to find that it does not appear to be as widely known as it deserves.

This Museum is part of the "Public Library, Museum and Fine Art Galleries" of the County Borough of Brighton, and is

housed in a large building (close to the celebrated Brighton Pavilion), which was reconstructed for its present purpose, and opened in 1902. This Museum, as well as the Booth Museum, is open free daily.

The Director is Mr. Henry D. Roberts, and the excellent official guide-book is sold for the small price of one penny.

The general effect of the Museum is very pleasant; it appears clean, cheery, light, and instructive. Among the more interesting zoological exhibits, the following may be perhaps specially mentioned:—Three stuffed Sudan Bush-Babies (*Galago teng*) and two stuffed Hunting Dogs (*Lycaon pictus* subsp. *incert.*), all collected by Mr. Leonard Gorringe near Roseires, on the Blue Nile. The specimens of *Lycaon* are particularly valuable, as this predaceous beast rarely appears in that part of the Sudan. An unusually large skull of a Crocodile, labelled as being from Borneo; and a Long-nosed Skate, caught off Brighton in 1908, which was exhibited alive in the Aquarium, and is said to have weighed 170 lb., and been 6 ft. 3 in. in length, and 4 ft. 11 in. in width.

3. BRUNN AM GEBIRGE, LOWER AUSTRIA.

The firm of Karl Gudèra, animal dealers and game exporters, established in 1867, has its headquarters office in the Millergasse in Vienna, and two establishments in the country to the south of Vienna.

One at Mauer, about six and a half miles from Vienna, I did not have time to visit. Herr Fritz Schmeidler (Herr Gudèra's manager) told me that it is chiefly devoted to sporting dogs and Skye terriers, and to domestic poultry.

The second, the Tierpark at Brunn am Gebirge, about eight and a half miles in a straight line from the centre of Vienna, is more interesting to the general zoologist, and on May 3rd, 1910, I had the pleasure of visiting this institution in the company of Herr Schmeidler. It consists of a villa, farm buildings, and garden on the slope of a hill. The garden is prettily laid out, and includes a rock-garden, ponds for aquatic plants and a small hot-house. Between the garden and the animal enclosures are the sheds for storing the nets used in the capture of Hares, Partridges, &c., in Hungary. The partridge-nets are 656 ft.

(200 metres) in length and 23 ft. (7 metres) in height, so it may be imagined that trained men are required to manipulate them with celerity and success.

The live stock that I saw at Brunn comprised many breeds of domestic dogs, European wild Carnivora, Marmots, Squirrel, Roedeer, three species of Asiatic Deer, Ravens, Rook, Owl, Buzzard, Merlin, and large series of Anserine and Gallinaceous birds, the collection of Pheasants being particularly rich. Two Capercaillies (*Tetrao urogallus*), both hens, were the most interesting birds I saw at Brunn, as this grand species is but seldom seen living in menageries.

4. COLOGNE, GERMANY.

(i) *Zoological Gardens.*

I have visited these Gardens in 1876, 1887, 1892, and 1905, and in May, 1910, had the pleasure of again seeing them in the company of Dr. Wunderlich, the Director.

Among the very many objects of interest in this collection the following may be specially mentioned.

MAMMALS.—Two male Sacred Baboons (*Papio hamadryas*), which were received here as young specimens in 1886, and are now both well-grown beasts with fine grey mantles; they have therefore been twenty-four years in captivity and appear very flourishing.

Two Red Ruffed Lemurs (*Lemus varius ruber*).

A Panda (*Ælurus fulgens*), in beautiful condition and very lively and active, in the well-warmed Monkey House. The Panda and Red Ruffed Lemurs were in cages next to each other, and it was curious to notice how the colour of the fur in these two very different species of animals exactly matched in appearance.

Two Asiatic Wild Dogs (*Cuon alpinus*), which were born in the Breslau Zoological Gardens. Dr. Wunderlich told me that this species had formerly bred in Cologne, but that both the old pair and their descendants were now dead.

A young male Musk Ox (*Ovibos moschatus*).

A male North African Red Deer (*Cervus elaphus barbarus*).

A very fine pair of Sudan Giraffes. The tassel on the tail of the bull was so well developed that the ends of the hairs reached the ground.

An Echidna, which has lived nearly ten years here.

BIRDS.—A Racket-tailed King-Crow (*Dissemurus paradiseus*), now twelve years here. Dr. Wunderlich tells me that it grows a good tail every year.

I saw seventeen Owls of ten different species, including *Bubo turcomanus*.

The Accipitres numbered sixty, representing thirty-five species; perhaps those least often seen in captivity were the Crowned Harpy Eagle (*Harpyhaliaetus coronatus*), a Marsh-Harrier (*Circus aeruginosus*) (one year here), and the Vultures (*Vultur occipitalis* and *Neophron pileatus*). A Caracara (*Polyborus*), which had been obtained in 1881, died the week I was in Cologne, having therefore lived twenty-nine years in captivity.

The collection of Geese and Ducks is particularly rich, and there is a good series of Storks and Herons, including the Australian *Ardea pacifica*. I saw examples of five different species of Pelicans, and no less than seven species of Ibises.

Dr. Wunderlich kindly gave me some notes on the longevity of birds in the Cologne Gardens, which are of general interest:—

Common Flamingo (<i>Phoenicopterus roseus</i>), living over 20 years	
Scarlet „ (<i>P. ruber</i>)	„ 25 „ [here.
Manchurian Crane (<i>Grus japonensis</i>)	„ 15 „
Asiatic White Crane (<i>G. leucogeranos</i>)	„ 30 „
The Canadian Crane (<i>G. canadensis</i>) breeds here with success.	

In the large bird house of the Cologne Gardens is a small collection of Reptiles, Batrachians, and Freshwater Fishes, including seven small individuals of the African Electric Cat-Fish (*Malopterurus electricus*), and many specimens of the curious eel-shaped fish, without paired fins, *Symbranchus*, from South America.

(ii) *Museum.*

The Municipal Natural History Museum was started in 1892. In January, 1895, the "Verein zur Förderung des Museums für Naturkunde zu Cöln" was founded, and under its auspices the collection was increased and arranged, and in May, 1902, opened to the public in its present handsome quarters, the first and second floors of the Stapelhaus, a restored sixteenth century building on the bank of the Rhine.

Excellent popular guide-books to the collections, written by Dr. O. Jansen, have been lately published.

The leading features of this museum are the large groups of stuffed mammals and birds, which are well calculated to catch the eye of the casual visitor and to excite his interest, so as to lead him on to further enquiries about the animals he sees, and so to spread popular knowledge of natural history amongst the public.

Unfortunately the majority of the specimens are not protected by glass, and, under the conditions in which the collection is exhibited, it is to be feared that neither fur nor feather can be preserved for many years.

The entrance hall on the lower floor contains two large groups illustrating very different sides of the European fauna, one the coasts of the North Sea and one the high mountains of South Europe. In this hall there are also microscopes arranged on tables for the use of visitors (a feature I also noticed in the Brighton Aquarium), and the preserved skins of various large animals that have formerly lived in the Cologne Zoological Gardens.

The main hall on this floor is devoted to general and local series of mammals and birds. The fine family groups of all the principal European mammals, from Red Deer, Wild Swine, and Bear to the smaller Carnivora and Rodents, should be specially mentioned, and also a less complete series of European birds mounted in their natural surroundings. There is also a series of nearly three hundred pairs of horns and antlers, collected by the late Dr. Hermann von Wissmann (1853-1905), formerly Governor of German East Africa.

On the upper floor, the chief attraction is the large collection of stuffed mammals and birds made in East Africa by Herr Bernhard Kreuser in 1906, and mounted in Cologne during 1907 and 1908.

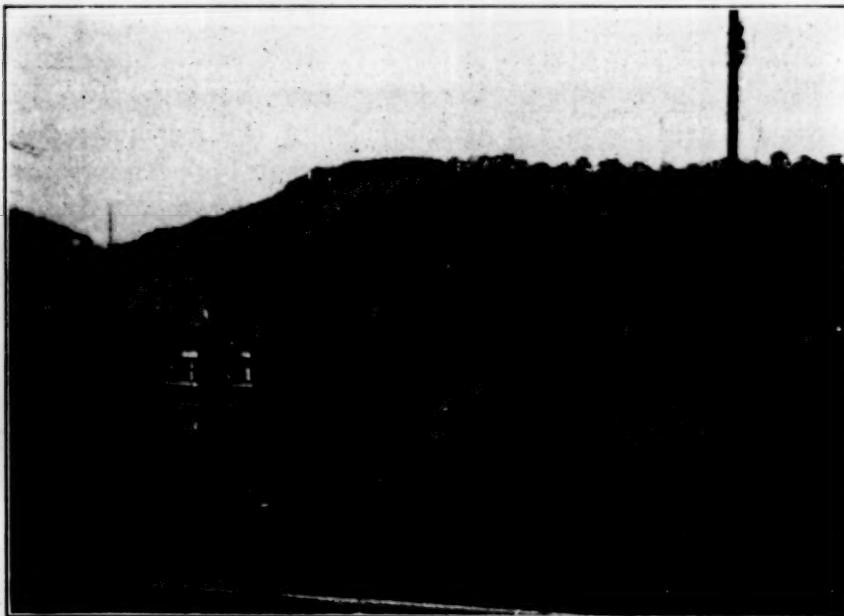
Mention must also be made of the method employed in this Museum of exhibiting those species of fish which are of local interest. Stuffed specimens, mounted amongst suitable surroundings, are shown in five large glass cases, under the following divisions:—1. Pond fish. 2. Brook fish. 3. Rhine fish, stationary. 4. Rhine fish, migratory. 5. North Sea food

fish. This arrangement is both instructive to the local public and of interest to the visitor from abroad.*

5. HALIFAX, ENGLAND.

Zoological Gardens.

In July, 1910, the Zoological Gardens at Chevinedge, Salterhebble, near Halifax, in Yorkshire, were only fifteen months old, but they were well worth going a long journey to see, and they reflected great credit on Mr. A. R. McKill, the Director.



Chevinedge, Yorkshire. Site of Halifax Zoological Gardens.

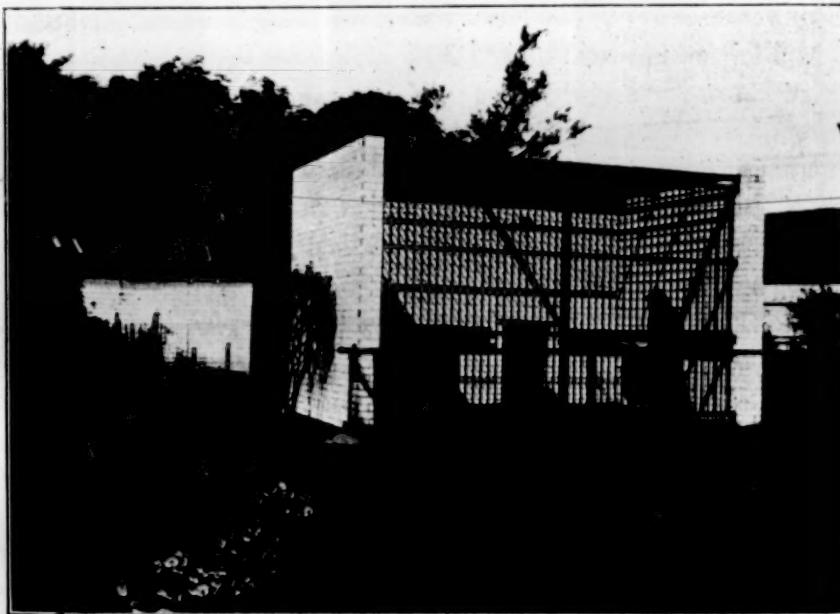
The site is very fine. On the projecting angle of a plateau is a level garden of green trees dotted here and there with white and red cages; from the edges of this plateau there are grand views of hills and dales, and wooded rocky banks slope down to the river in the valley below, and all in a strong, healthy hill air.

The area at present occupied is twenty-four acres, but another twenty acres can be eventually taken in if necessary, and among the various schemes proposed for the future perhaps the most

* The Aquarium in the "Flora" Gardens, Cologne, which I had seen in 1905, I revisited in 1910, and found all the tanks empty.

attractive is that of enclosing one of the steep hill-sides between the plateau and the river as a large paddock for Ibex to live in.

The grounds are divided into two sections—the zoological garden and the "amusement park." In the former the principal features are the "Mansion," containing the administrative offices and the restaurant, the combined Elephant and Monkey House, the "Miniature Farm," the conservatory, the ponds for waterfowl and seals, and a number of solidly built separate cages, faced with white glazed bricks. In the latter is a Theatre, with a small collection of stuffed birds in a side gallery, a



Halifax Zoological Gardens. Bears' Cage. July, 1910.

"Miniature Railway," and a "Winter Garden" and Reptile House in course of construction.

I saw in the menagerie just over one hundred mammals of fifty-two species, and representatives of sixty species of birds. So far no reptiles, batrachians, or fishes were being exhibited. By far the most interesting animal to a zoologist was a fine Cape Jumping-Hare (*Pedetes caffer*), which I was told had now lived about fifteen months here, and appeared to be in excellent condition. The following beasts must also be mentioned: a very

large Red Fox, two very attractive little Seals, a female Chapman's Zebra with white rings above her hoofs, a Duikerbok, and a giant domestic Goat.

6. LONDON, ENGLAND.

(i) *Zoological Gardens, Regent's Park.*

The British Museum (Natural History), the most important zoological museum in the world, needs no mention in this article, nor does the great menagerie of the Zoological Society, but I cannot pass on to the smaller institutions without giving a list of a few of the rarer animals which I saw alive in the Regent's Park :—

One Siamang (*Hylobates syndactylus*), from Perak ; presented by Mr. E. M. Hawes, Aug. 7th, 1909.

Two Aye-Ayes (*Chiromys madagascariensis*) ; purchased Sept. 12th, 1908.

One Takin (*Budorcas taxicolor*), from Bhutan ; presented by Mr. J. C. White, June 22nd, 1909.

One Vaal Rhe-bok (*Pelea capreolus*) ; presented by Mr. F. Burgoynes, April 3rd, 1908.

One Tasmanian Wolf (*Thylacinus cynocephalus*) ; purchased March 12th, 1909.

Two Tree Kangaroos (*Dendrolagus ursinus*), from Arfak Mountain, New Guinea ; purchased June 25th, 1909. This pair looked very nice, out in the open, by the "Squirrel's Tree."

The Birds of Paradise!! On Oct. 7th, 1908, I counted no fewer than fifty individuals of these wonderful birds, and during various visits in 1908, 1909, and 1910 saw examples of no fewer than eleven different species.

Six Cocks-of-the-Rock (*Rupicola crocea*), from British Guiana ; deposited June 14th, 1910.

One Eagle (*Pithecopaga jefferyi*), from Luzon ; purchased Sept. 2nd, 1909.

Two Green-legged Flamingoes (*Phoenicopterus ignipalliatus*) ; purchased June 7th, 1909.

One Tuatera (*Sphenodon punctatus*) ; purchased June 9th, 1908.

Two Musky Caymans (*Caiman palpebrosus*) ; presented by Mr. E. Salis-Schwabe, May 16th, 1908. And last, but perhaps the most interesting of all :

One South American Mudfish (*Lepidosiren paradoxa*) ; presented by the Goeldi Museum of Para, Sept. 4th, 1908.

(ii) *Crystal Palace, Sydenham.*

In September, 1908, I visited the Crystal Palace, and was most impressed by the number of wild birds to be seen in the grounds. The restorations of Extinct Animals (though naturally open to criticism in the new light thrown by palaeontological discoveries since the days when Hawkins made them) are also very impressive and of great historical-zoological interest. I also saw the Aquarium and the Leadbetter menagerie, then on exhibition at Sydenham.

The Crystal Palace Aquarium proper only consists of ten wall-tanks and four table-tanks, but a small menagerie and some aviaries are attached to it. The collection of live animals on Sept. 28th, 1908, comprised twenty-two Monkeys representing eight common species, one Ring-tailed Lemur, one Palm-Civet, one Suricate, two Badgers, many domestic Rats, Guinea-pigs and Rabbits, specimens of fifty-three species of birds (including eighty-one individual Parrots), about thirteen reptiles of seven species (the most remarkable being two Crocodiles of a species seldom seen in captivity in Europe, possibly *Crocodilus palustris*, but I did not have an opportunity of examining them critically), one Toad, Newts of two species, one white Axolotl, and representatives of eighteen species and varieties of fresh-water fish.

The Leadbetter collection deserves longer notice. It was formed by Mr. Robert Leadbetter at Hazlemere Park in Buckinghamshire, where I believe many wild animals, including Lions, Leopards, Hyenas, Wolves, Jackals, Bears, and Zebra, were bred with success. When I saw them exhibited at the Crystal Palace the animals all appeared to be in excellent condition. A good barrier had been erected to keep the visitors at a proper distance from the animals, and the following notice was posted up : "The Public are cautioned not to FEED, TOUCH, or ANNOY the Animals." If this rule was posted and enforced in all menageries the mortality of wild animals in captivity would be greatly reduced.

This Leadbetter menagerie is unfortunately no longer in

existence ; it was sold by auction by Messrs. Moss and Jameson at East Croydon on July 14th, 1910, the total sum realised being, according to the 'Daily Mail' of July 15th, 1910, about £1400.

The menagerie, when I saw it, contained seventy-four mammals, representing thirty species, and there were also fourteen Parrots and two Emus. At the sale the African Lion, "Prince," born in the menagerie May 30th, 1905 (so, then, five years one and a half months old), fetched £100,* but his mother, "Victoria," a Lioness imported from Somaliland, only realized £14 ; "Emperor," an imported Indian Tiger, believed to be about nine years old, went for £105. A Bear only fetched £2. Jackals were bought for £1 15s. to £1 5s. each, and Wolves at £1 each. The Ceylonese female Elephant, "Lowla," said to be nine years old, sold for £190, and the male Indian Elephant, "Babs," said to be five years old, fetched £150.

(iii) *Earl's Court, London.*

The Hungarian Exhibition at Earl's Court in 1908 contained several things of zoological interest ; omitting the models of domestic animals and the purely agricultural-zoological exhibits, the following may be mentioned :—

First, the exhibit of the Hungarian Central Ornithological Office, consisting of feeding-boxes, artificial nesting-holes, stuffed birds, coloured plates, maps of bird migration, &c., carefully arranged by Mr. Titus Csörgez, under the direction of Dr. Otto Herman.

Secondly, the large group of stuffed Hungarian animals, including Red, Fallow, and Roe Deer, Chamois, Muflon (introduced into Hungary from the Mediterranean), Boar, Lynx, Bear, Eagle, Waterfowl, &c., mounted by the Budapest taxidermist, Mr. Frederick Rosonowsky.

Thirdly, the Menagerie (proprietor, Mr. Frank C. Bostock ; manager, Mr. R. J. Aginton), which I visited on three occasions. Excluding horses, ponies, and domestic dogs, it contained about one hundred and five mammals, representing about twenty-seven species, three birds, and a few reptiles. The large *Felidæ* formed the chief part of the show. I saw twenty-six Lions

* Prices, *fide* 'Daily Mail,' July 15th, 1910.

(including cubs), one Tiger, eight Leopards, five Pumas, and one hybrid between a male Lion (*Felis leo*) and a female Jaguar-Leopard (*Felis onca* \times *F. pardus*), bred in captivity in the United States of America. This was the animal that had been deposited in the Regent's Park Zoological Gardens on April 14th, 1908. Some Californian Sea-Lions should also be mentioned.

(iv) *Shepherd's Bush, London.*

"The White City" Exhibition, in 1908, contained a few wild animals in captivity. The Beavers and five young Bears in the Canadian Section attracted much attention on the part of the public, and Mr. Gustave Hagenbeck had a show, where I saw, besides horses and a dog, one Sloth-Bear, six Indian Elephants, a white Deer, a Bactrian Camel, and, what was of more interest, a male Blackbuck (*Antilope cervicapra*), trained to take part in a performance, a very much rarer sight than a performing Lion or Bear.

In 1909 Mr. Carl Hagenbeck exhibited a small menagerie in "The White City," with some trained animals under the skilled charge of Mr. Schilling. Besides domestic dogs, the show consisted of eight Lions, eight Polar Bears, seven Sea-Lions, one Seal, one Gannet, two Cormorants, about thirty Seagulls, and a Walrus. Mr. Schilling told me this Walrus was a male, about three years old, and that it was then eating 50 lb. (over 22 kilos.) of fish per day!

(v) *Covent Garden, London.*

Robert Green & Co.'s "Bedford" Aviaries and Aquarium at Covent Garden Market are always interesting to visit; in 1908, 1909, and 1910 I found representatives of about a hundred species of vertebrate animals (small mammals, birds, reptiles, batrachians and fishes) usually on exhibition, and also a few aquatic invertebrates. The celebrated old White Axoltl died about June, 1909, having lived, Mr. J. Barrow (the manager) told me, over twenty-five years in Covent Garden.

(To be continued.)

LAPWINGS (*VANELLUS VULGARIS*) IN THE PAIRING SEASON.

By S. E. BROCK.

IN the arable portions of the Lothians, Lapwings are present, as a rule, throughout the winter in considerable flocks, showing preference by day for particular fields, but scattering more widely to feed as dusk approaches. Only during a prolonged period of frost do they disappear entirely, and in a mild and open winter their numbers are greatly in excess of the local breeding stock. Towards the close of February or early in March the latter reappears on the nesting grounds, and the activities characteristic of the pairing season are at once initiated, although confined in the first place to a few birds, the other arrivals remaining apart in a loose flock. From the numbers of the latter it would appear that a proportion is composed of foreigners, and the gradual dwindling of the flock from day to day goes to support the supposition; while occasionally, on the passage overhead of a band of migrants, one or two individuals may be seen suddenly to take wing, and, answering the call of the travellers, follow them in hasty flight northwards.

If the birds are disturbed at this early season, the looseness of their connection with the nesting ground is shown by their tendency to desert it—a tendency equally apparent in the birds still flocked, and in those individuals which have separated from their fellows and commenced their spring activities. It is, however, interesting to note that the latter, before quitting the nesting ground, frequently circle overhead for a little, emitting notes of alarm and anger, and acting in a manner closely approaching their behaviour when eggs have been laid—a good illustration of the “association by contiguity,” so characteristic of avian psychology. The field thus deserted by the birds may remain tenantless for hours, frequently until the dusk of evening. Apart from outside disturbance, at frequent intervals the birds leave the grounds of their own accord, particularly during early afternoon, and until mid-March, or even

later, this phenomenon may continue, more especially in the event of cold or stormy weather.

In the early days after the arrival on the nesting ground signs of dawning sexual instincts amongst the flocked birds are evinced by a slight increase of jealousy on the part of the males, which tend to make sudden unprovoked attacks on each other, which attacks, however, are only momentary and of slight extent. Soon a few males separate entirely from their companions, and take up certain more or less definite positions in the field, showing considerable jealousy of any trespass on the part of their neighbours. Here they spend a large part of the day, occupying themselves in the formation of scrapes, in aerial combats with other males, or in courting any female bird which may happen to settle not too far off, while at intervals they indulge in prolonged song-flights, ranging over a wider area. The limits of the ground claimed by each male are, however, of very vague definition, and appear to be modified with the advance of the season, or with the little group of scrapes with which the male interests himself, since a group formed in the earlier days may be deserted later in favour of a fresh set at some distance. While present during a considerable portion of the day in his especial "estate," the bird does not by any means confine himself entirely thereto, being sometimes absent for hours, during which he may resort to neighbouring fields in search of food, or to some pond or watercourse in which to bathe.

A feature of early March is the high proportion of males to females present, a discrepancy largely due to the fact of the weaker attachment of the females at that season to the nesting grounds. When present, also, the females, owing to their more retiring and less active habits, are much less in evidence than the other sex. Nevertheless, there is reason to believe that the large numerical difference between the sexes is not merely apparent, and that the males are actually somewhat in excess.

Spring Flight.—Rising slowly from the ground the male executes a few laboured flaps, moving the wings with exaggerated slowness—owl-like; thence he quickens his pace, and, rising suddenly at an abrupt angle, commences the song, the greater part of which, however, is emitted as the bird falls again. During the utterance of the song, in a pause occurring after the

penultimate note, the performer throws himself sideways almost on his back, instantly recovering himself with a flurry of wings. The bird now scuds rapidly over the ground at a moderate height, making a pronounced humming sound with the motion of his sharply-driven pinions, and occasionally tilting himself from side to side, much in the manner of a Snipe when flushed. From this scudding and humming flight the bird may, and frequently does, recommence the song, repeating the whole of the previous performance with the exception of the owl-flight, which appears to be confined to the initial movement. Such is the common course of the spring or "nuptial" flight, but its variations are infinite.

Song.—The spring song of the Lapwing runs a more regular and unvarying course than the accompanying flight, but, like all bird-notes, its representation on paper is difficult. The following phrasing is the result of several attempts and reconstructions: "Whey-willuchooee-willuch-willuch—cooee" (the first syllable long-drawn and hoarse of tone; the second and third "willuch" uttered rapidly and staccato; then ensues a pause, during which the previously described partial summersault is executed, followed by the loud, clear, and musical final note).

While the female takes part in the prolonged and intricate manœuvrings so frequently gone through on the wing by winter flocks, she does not indulge during the breeding season in either song or song-flight proper.

A constant and salient feature of the pairing season is the aerial combat between two rival males. The two birds taking part rise slowly and almost perpendicularly in the air for some considerable height, their wings beating rapidly and legs slightly dangling, one endeavouring to rise above the other. At intervals the upper bird stoops suddenly on the lower, an attack usually avoided by an agile turn of the wing; but occasionally a distinct and hollow clap is audible, indicating an exchange of blows, dealt apparently with the wing. During the course of the affair the song is repeatedly uttered, but with the omission of the final notes. On at length parting company, both combatants break into the full song-flight, repeating it twice or thrice ere re-settling in their respective stations. These encounters, while usually individually of short duration, are in-

cessantly occurring at all hours of the day, and have at first sight the appearance of genuine rivalry. Despite the occasional blows given and received, however, it is doubtful how far such tussles are to be regarded as real struggles for mastership or for breeding ground. There is frequently about them an aspect more suggestive of play, and the fact that they persist in unlessered frequency throughout the pairing season and long after the eggs are laid is in favour of this interpretation. More realistic and suggestive of veritable antagonism are the occasional ground combats, less common than the aerial performances, but still not infrequent in the early part of the season. Usually one bird is here the aggressor, swooping repeatedly from one side or the other at its rival on the ground, or dropping on it from above like a hawk. The threatened bird twirls round each time to face the onset of the other, evading the blow by swerving aside or by little upward springs into the air. At length, bullied into flight, it rises and attacks in turn, or indulges in prolonged song-flight to a distant part of the field. Should it return and settle once more on the same ground the attack by the other bird is immediately renewed. Such struggles as this are at times most obstinately persisted in by the two birds—sometimes for as long a period as an hour or an hour and a half on end. So engrossed are they with each other that I have known them ignore the courting of a female on the disputed ground by a third male.

When not engaged in these frequent aerial exercises, the males go through certain peculiar movements on the ground, not a little puzzling to the observer. Standing upright in his chosen area, a bird utters a strange grating note, usually harsh in tone, but varying at times to a more plaintive pitch; meanwhile the tail and wings are swayed up and down in a rhythmical manner. This movement may be continued without further development for a considerable period, but on any stimulus, such as the passing overhead of a female—or even without extraneous cause—the male drops to the ground, and, lying far forward on his breast, shuffles the body and scrapes energetically with the feet, which, if sufficiently near the observer, may be seen in rapid motion. At short intervals the tail is spasmodically bent downwards, the action corresponding with energetic

foot-work. Rising again in a few moments, the bird commences to pluck from the soil stubbles and roots, jerking them backward over the shoulder in a haphazard manner, careless whether they fall in the scrape or, which is quite as frequent, outside it. Thence he gradually steps forward, a pace or two at a time, continuing to pluck straws and dispose of them in the previous way. Later he may return to the same spot, and go through similar actions a second time. It is in this manner that the hollows or "false nests" are formed, and each male in the course of the days elapsing before mating makes a number of such, usually in groups of two or three together, in which he works at intervals daily; and it is in one of these scrapes that the eggs are ultimately laid. The female, so far as I have seen, does not initiate such scrapes on her own account, although she later helps to deepen and line one or two previously formed by the male. The exact situation of the nest is thus primarily dependent on the choice of the male bird—a condition of affairs somewhat unexpected.

It is of interest to note that the males show greater jealousy of each other when scraping than on any other occasion, and when two birds chance to be standing quietly near each other, nothing is more likely to bring about hostility on the part of one bird than if the other should scrape or attempt to do so.

While the formation of scrapes is of common occurrence in the absence of the female, the proceeding is much more energetic and repeated in the near presence of a bird of that sex, and it has an important *rôle* in the "courting" display of the species. In its usual form courtship takes the following course: On catching sight of a female bird, or when the latter chances to settle somewhere not too far away from his usual stance, the male approaches her by means of a direct and rapid run. On arrival he stops, and describes a half-circle close round her, his pose and gait peculiarly constrained and stiff; the head and neck are held out in line with the body, and the crest depressed. He then, without further pause, stalks off stiffly directly away from the female, and makes for his nearest scrape, into which he instantly drops. He works now with exceptional and prolonged energy, pausing only occasionally to pluck straws and grasses, and dropping them over his shoulder or by his side. Should

the female make no sign, and many days may elapse before she does so, the male finally leaves his scrape, and, stepping forward a little, renews his stubble-plucking, throwing them over his shoulder as before. He may then return to the scrape, or perhaps to another one, and repeat the performance, but he rarely again approaches the female at that period. Tiring at length of his prospective mate's unresponsiveness, he seeks outlet for his energy in song-flight, or in aerial encounters with another male. A slight variation of the courtship is when he approaches the female on the wing. In such a case, on settling close beside her, he momentarily takes up a very erect attitude, towering over the other bird, his breast-feathers puffed out to their fullest extent, and the long crest inclined forward. From this position he passes to the usual procedure. The female usually receives the advances of the male with seeming indifference, but at times indicates annoyance or distaste by a rapid retreat, even taking wing and passing to a distant part of the field.

Females occasionally evince considerable jealousy of each other, indicated in a manner similar to the males. On such occasions the two rival birds, settled near each other, sway their tails up and down rhythmically, and scrape slightly, plucking a little at straws. Ultimately one may rush at the other, and a short bout of brisk sparring ensues. Several times I have been considerably interested to observe such encounters between two females ended by a male bird rushing up and separating the combatants, and, not content with terminating the strife, he attacks one of the females, driving it to some distance, a mode of behaviour only witnessed under similar circumstances. On one occasion a male, which was courting a female bird, suddenly desisted to attack and pursue a second female at a little distance. The common aerial encounters and more strenuous ground struggles of the males are, however, not to be seen in the other sex.

About a fortnight after the commencement of courting and scrape-forming on the part of the males, and some three weeks before laying begins, the females at length begin to show some response to the hitherto ignored advances of the males, and what may be regarded as a sign on their part of acceptance of a mate is indicated in the following manner: On a male having

courted in the usual way and dropped into one of his scrapes at a little distance, the female gradually approaches the latter spot by short and indirect stages. On her arrival the male rises from the scrape and takes a step forward, adopting as he does so a curious and striking pose. Keeping his back turned towards the hen, now very close beside him, he slowly lowers his bill to the ground and raises his tail almost perpendicularly in the air, his richly coloured under tail-coverts thus prominently displayed. The female now settles in the scrape, and goes through the usual actions of the cock when in that position, working with feet and body, the tail depressed at intervals in spasmodic fashion; but at first her motions are more leisurely, and lack the intense energy of the male. Several minutes may be passed by her either in the prosecution of these activities, or in sitting quietly in the scrape. During this interval the male retains his remarkable uptilted attitude, standing a yard or so in front of his mate, employing himself in the collection of nest-material, which is jerked backwards over the shoulder in the direction of the scrape. When the female later quits the scrape, moving off leisurely a short distance, the male usually returns to it and renews his previous labours. At times the hen fails to respond to this second invitation, but she may, on the other hand, once more approach the scrape, when the former scene is again enacted.

It is somewhat curious to note how the male, on all such occasions, or when scraping near a female, takes pains to maintain his back to the view of his prospective mate, and that this position is not mere accident is shown by his occasional scraping or standing in such an attitude with his back to a strong breeze—a position of discomfort avoided by all birds under normal circumstances.

Such a scene as this, of male and female working in turn in the same scrape, may take place with the same pair of birds at not infrequent intervals during a single day, and it is nearly always terminated for the time being by the retiral or loss of interest of the female. On the lapse of a day or two thus spent the scraping antics become less frequent, and the two birds are content to remain quietly in each other's company, usually at no great distance from the scrapes. For frequent short intervals both may disappear to feed on some recently

worked neighbouring field where food may be abundant, or the male to engage in song-flight excursions and harmless aerial encounters with other males, but sooner or later both return to the chosen ground. On the occurrence of coition, however, which first takes place a few days before egg-laying, a renewed activity is shown. Immediately following this rite the female proceeds straight to the scrape, and works in it with energy and thoroughness hitherto unequalled, the male frequently taking his place in a neighbouring scrape. Between her bouts of energetic foot-work the female plays with stubbles, jerking them over her shoulder. Exceptionally she so behaves when standing facing the scrape, thus dropping the nest-material in a direction contrary to the right one. In all their nest-building activities, in fact, both sexes behave in a strangely haphazard way, as though quite unconscious of what they are about. Since it is somewhat difficult to believe that the scanty lining which the nest-hollows receive can be of any practical utility to the species, one is tempted to regard the proceeding as possibly a degenerate survival of what was once a more perfect nest-building instinct in the earlier history of the race. On the other hand, it has been suggested that natural selection, acting on such rudimentary activities, may so develop the nest-building art; but it is not easy to understand what scope natural selection has in the present instance.

In the absence of her mate, the female shows her dislike or distrust of the approach of a strange male by running from his unwelcome advances, even taking wing to avoid him. Such encroachment rarely occurs during the presence of the legitimate male. The bird in possession, in fact, enjoys a strong moral advantage, which is seldom overcome. I have noted no serious attempt by unpaired males to forcibly deprive a male of his mate.

From the facts available it would appear that the scrape used by the female after coition is the one which is destined to contain the eggs; in some cases, at least, this is certainly the case, and it is probably the general rule.

When an egg has been deposited, I have seen the male proceed to the nest as though with the intention of scraping, but on reaching it he contented himself with standing erect over it, moving his tail gently up and down, and plucking at

straws. This latter habit persists throughout the period of incubation, but is principally displayed by the male. Apparently he does not attempt to sit on the eggs until the clutch is complete and incubation commenced by the female, but immediately thereafter he undertakes his full share of the duties.

In a general review of the habits of the Lapwing in the pairing season, the following would appear to be the salient points:—

1. Some males (and females) are considerably earlier than others in the initiation of pairing instincts (the earliest scrapes being formed in February).

2. Each male occupies a more or less definite area of ground, in which he passes much of his time, and in which he forms a variable number of "false nests."

3. Aerial encounters between two males are of incessant occurrence throughout the season, but these encounters appear to lack seriousness, and frequently bear the impress rather of play.

4. Ground struggles, where one bird persistently attempts to drive a rival off disputed territory, are not uncommon, but are less prominent than the last.

5. There is some evidence to show that the females are numerically inferior to the males.

6. The male does not attempt to secure a mate by forcible means.

7. Other things equal, the male which is most active in courtship is probably most likely to secure a mate.

8. After courting a female, a male repairs to a previously-formed scrape, and the first overt sign on the part of the female of acceptance of her mate is indicated by her following the male to the scrape and working in it.

9. On a male having obtained a mate, no serious effort is made by unpaired males to forcibly deprive him.

10. The female deposits her eggs in a scrape originally formed by the male.

On the evidence one may perhaps venture so far as to suggest that the female has considerable scope for choice in the selection of a mate. What directs her choice (supposing such to be employed) and what effect such discrimination may have on the species are problems apparently insoluble by observation in the field.

THE BIRDS OF THAT PORTION OF THE NORTH-EAST COAST BETWEEN TYNEMOUTH AND SEATON SLUICE, NORTHUMBERLAND.

BY J. M. CHARLTON.

(Continued from p. 218.)

GOLDEN ORIOLE (*Oriolus galbula*).—One of the two specimens recorded for Northumberland by J. Hancock was a female killed in a garden at Tynemouth in the spring of 1821. This is recorded by Selby in his Catalogue, and, as is stated by J. Hancock, is probably the bird that is in the Hancock collection among the birds from the old museum.

GREAT GREY SHRIKE (*Lanius excubitor*).—A rare migrant. I know of six birds recorded for the district. A male was shot by John Laws, Jun., at Cullercoats in 1871, and is now in the Hancock Museum. Two were shot in about 1890 by Mr. John Ewen. Two more were observed by my brother and myself in the fields behind Whitley and close to Whitley Dene on April 14th, 1904. They flew from the sea chattering, and settled on a tree near us, after which they flew on inland. They had evidently just arrived, although this is an unusual date for them to do so, for this species has not been known to breed in England. Possibly they were making for the west coast, and thence north. Another was shot in Holywell Dene in 1900.

WAXWING (*Ampelis garrulus*).—A very rare visitant. The only record is of a pair in fine plumage which were shot near Earsdon on Feb. 8th, 1848 (Zool. vol. vi. p. 2064), and recorded by T. J. Bold. In the following year nineteen specimens were captured in South Durham, and there was a considerable irruption of these birds on the north-east coast at that time.

SPOTTED FLYCATCHER (*Muscicapa grisola*).—An uncommon resident during spring and summer, but more often seen while on migration in spring and autumn. It breeds in Holywell Dene.

PIED FLYCATCHER (*M. atricapilla*).—A rare spring visitant. Mr. R. Duncan tells me that he was once informed by Mr.

Hancock that he had shot a Pied Flycatcher near St. Mary's Island, and on going to pick it up found he had shot a Wryneck also. Very probably this would be in April, 1833, the date on which the only Wryneck which Hancock records for the district was shot. Mr. C. M. Adamson, in his 'Scraps about Birds,' states that a male in his collection was shot at Briery Dene on April 23rd, 1870 ; it was very tame, flitting from bush to bush before him. Mr. Richardson tells me he has set up several, got between 1900 and 1904.

SWALLOW (*Hirundo rustica*).—Arrives in fair numbers, but seldom breeds here. The average date of arrival is April 29th. My brother observed two young birds on the cliffs just north of St. Mary's Island on Nov. 1st in 1905 ; and on Nov. 13th in 1909 an adult was seen near the same spot ; both of which are very late occurrences. Occasionally migration is to be observed in full swing on the coast as the following extract from the 'Transactions of the Natural History Society of Northumberland, Durham, and Newcastle-on-Tyne' (New Series, vol. iii. part i.) by E. Leonard Gill, Esq. (Curator, Hancock Museum), will show : "on the coast between Whitley Bay and St. Mary's Island on May 1st, 1908, we witnessed what was evidently a migration flight in progress. All the morning small parties of Swallows were passing north up the coast, flying chiefly just above the banks. In contrast to their usual manner of flight, the steady and undeviating way in which these birds pushed forward towards the north was very striking. We saw at the same time a single party of Swifts, similarly flying directly north but at probably three times the speed of the Swallows. There were many other evidences of migration that morning at St. Mary's Island. Numbers of Wheatears and Pied Wagtails were about on the rocks, and we also saw a pair of Yellow Wagtails, a rather scarce bird in this district at any time."

HOUSE MARTIN (*Chelidon urbica*).—A fairly common resident, which breeds among the cliffs near the table rocks, Whitley, and also on suitable houses in the district. More common at migration time in spring and autumn ; the usual date of arrival being April 23rd or thereabouts.

SAND-MARTIN (*Cotile riparia*).—Formerly a fairly common resident, but now only seen on migration. Up to recent

years they used to breed in the sand-banks north of St. Mary's Island. The average date of arrival is April 1st.

GREENFINCH (*Ligurinus chloris*).—A common resident; frequenting the several denes chiefly.

GOLDFINCH (*Carduelis elegans*).—It has occurred at Holywell in winter among flocks of other Finches, but only very rarely.

HOUSE-SPARROW (*Passer domesticus*).—A very common resident. A pair nested in the signal-bell box at Cullercoats Station in 1906, despite the continual noise of the bell. Mr. J. Wright informs me that an entirely white specimen with hazel eyes was procured at Whitley Station in 1900. An occurrence which took place in our garden at Cullercoats will show how the common bond of species is more pronounced in this bird than in any other of the smaller kinds on the approach of an enemy. A party of five young Sparrows had come out of their nest, and in company with their parents were hopping somewhat gingerly along the garden-wall. Suddenly, however, one of them perhaps intoxicated by the unusual sights around him, lost his balance and toppled over into the road. I moved up to it, and having caught it, was about to replace it on the wall, when I suddenly found myself surrounded by chattering Sparrows. The mother had uttered a sort of hard squealing note of rage, and immediately all her neighbours in the district had assembled to aid her in protecting her young. She herself buffeted me in the face with her wings, and the rest flew chattering round my legs and head. They must have numbered at least fifty or more, and my friend Mr. A. King, who saw it, said that it was as if I had a swarm of bees buzzing round my head. Many of them actually pecked at me on feet and hands, and it was only after replacing the young bird on the wall that they disappeared as suddenly as they had come.

TREE-SPARROW (*P. montanus*).—Seldom seen except in autumn when numbers sometimes arrive from the Continent, but pass inland almost immediately. J. Hancock mentions that he has found it nesting at Whitley, never in trees, but in holes and coping-stones of old garden walls. But things have changed since then, and there are no such things as old garden walls. I have, however, observed a pair or two in recent years among the

disused lime-kilns in Whitley Dene, in which they appeared to be nesting.

CHAFFINCH (*Fringilla cælebs*).—A resident, but not numerous. The local names are "Sheely" and "White Linnet."

BRAMBLING (*F. montifringilla*).—An uncommon winter migrant; I have observed it during winter, but never in large numbers. I have not observed them later than February. The first records are three adult males in winter plumage shot at Cullercoats, Feb. 13th, 1860.

LINNET (*Linota cannabina*).—A fairly common resident.

LESSER REDPOLL (*L. rufescens*).—I only know of the occurrence of two individuals of this species, one of which I saw at Briar Dene on April 15th, 1904. It had evidently come to the coast preparatory to leaving for the Continent. The other I observed on Jan. 3rd, 1906, at the same place.

BULLFINCH (*Pyrrhula europæa*).—Of irregular occurrence in Holywell Dene and the surrounding district in winter.

CROSSBILL (*Loxia curvirostra*).—A specimen of this rare winter visitant was caught in Tynemouth Station in the winter of 1906. Two others, male and female, were shot in Holywell in 1909, the year of the large influx.

CORN-BUNTING (*Emberiza miliaria*).—A partial migrant; in spring and summer it is common, and breeds in the fields, but most depart in winter, going further south. During early spring the monotonous call of the male is to be heard from almost every hedgerow bordering the meadows. It is also very fond of singing from a tussock of grass, and I have counted as many as twenty males singing by the high road behind Cullercoats, within a space of half a mile.

YELLOW BUNTING (*E. citrinella*).—The Yellow Bunting is a very common resident. The local name is "Yaller-Yowley" (Yellow Howler). A hybrid between this species and the Reed Bunting was caught at Whitley on Jan. 30th, 1886, and lived in a cage at the Museum till June, 1887. J. Hancock thought this specimen a natural cross. It is now set up in the Hancock Museum. The coloration of this bird is as follows:—Crown and nape greyish olive with streaks of black, cheeks and throat sulphur yellow, of a more orange tint on lower part of neck; ear-coverts finely streaked by black up to eye; back and scapularies reddish

olive with large dark brown streaks; lesser wing-coverts brownish olive, quills and greater coverts dark olive-brown, the former edged by greenish yellow; tail dark brown, the inner webs of the two outer feathers white; feet pale yellow; breast greyish white with darker streaks on flanks.

[RUSTIC BUNTING (*E. rustica*).] — Mr. Duncan informs me that he saw one alive which had been caught near Seaton Sluice. He drew the attention of the late Canon Tristram to it, who, after examining it, confirmed his statement that it belonged to this species. Mr. Duncan compared it with a skin from Japan, where it is a numerous migrant, and it was proved to be an adult male. This was in the autumn of the year 1904, and the bird was afterwards exhibited at the Crystal Palace Cage-Bird Show in January, 1905 (cf. Zool. 1905, p. 279; Brit. Birds (additions since 1899), vol. i. p. 249). As some doubt has been evinced that the bird was caught at Seaton Sluice, I have included it in brackets. It was in the possession of a Mr. Slack, living at Winlaton, when Mr. Duncan examined it in December, 1904, and was a healthy bird in perfect plumage. Mr. Duncan examined it again in May, 1905, when he compared it with the skin from Japan, and with which it corresponded exactly. I am not aware what has become of the bird.

REED-BUNTING (*E. schœniclus*).—This bird is not uncommon, and breeds occasionally in Briar Dene. In early spring I have seen as many as ten of these birds together there. In winter they mix with flocks of Linnets and Yellowhammers.

SNOW-BUNTING (*Plectrophenax nivalis*).—An occasional winter visitant, formerly common, but owing to its constant persecution it haunts other shores. The first authenticated individual I can find is one which C. H. M. Adamson mentions in his 'Scraps' as being shot by him at Hartley as early as Sept. 21st in 1836. The local names are "Snowflake," "Snow-flight," and "Snowfleck."

STARLING (*Sturnus vulgaris*).—A very common species both as a resident and migrant. Large numbers arrive from the Continent in autumn and depart again in spring. My brother procured a bird of this species on Jan. 31st, 1903, with an abnormally long and broad beak. Possibly it was a bird which had strayed from the Færöes, where these birds have large

beaks (Howard Saunders, 'Manual of British Birds'). These birds assemble in great numbers on the huge banks of seaweed washed up by the tide to the south of Curlew Point, St. Mary's Island. On lifting this seaweed up large numbers of insects are discovered, especially quantities of large white maggots. In the year 1900 a bird with a lot of white on it was often observed at Whitley, and another with white on the head kept caged for three years.

ROSE-COLOURED STARLING (*Pastor roseus*).—I have only one record of this bird for the district, and that lies on rather slight evidence, although I think that there is sufficient to allow its inclusion in this list. It is a specimen which was caught alive by someone signing himself "An Amateur Ornithologist" in the 'Newcastle Daily Journal' some time in 1870. He gave a full description of it, and said that the length was only six inches, and the crest very small. It is therefore to be presumed that the bird in question was an immature female which had just attained adult plumage, but was smaller than a mature bird.

MAGPIE (*Pica rustica*).—Formerly of very occasional occurrence at Holywell; now never seen.

JAY (*Garrulus glandarius*).—Has been observed in Holywell Dene up to ten years ago, but since then it has been unknown, owing to constant persecution.

JACKDAW (*Corvus monedula*).—Resident and migratory; I have frequently observed numbers passing north in April. This species breeds at Tynemouth Priory and in the adjoining cliffs. The following occurrence was mentioned in the 'Newcastle Weekly Chronicle,' May 21st, 1910, by "Charles Wain," Mr. H. S. Wallace: "A cunning Jackdaw watched two parent Thrushes leave their little citadel for some worms. This was securely placed high up on one of the girders of the roof of Tynemouth Station. The Jackdaw was in the act of raiding the nest when one of the 'grey birds,' prompted doubtless by the warning instinct of parenthood, swerved round and saw the threatening act of piracy. It communicated the fact to its mate, and the pair dashed back to their home. Then followed a spirited attack by the smaller birds on the Jackdaw. He soon began to get the worst of matters. So fierce was their onslaught that the daw was obliged to retreat, abandoning all thoughts of rapine.

Safety became his one desire. The thrushes, however, pecked at him and beat him with their wings till at length he was driven from the roof to the danger zone between the electrified rails. Here the buffetings were more vigorously maintained ; not content with near at hand castigations, the birds in turn went aloft and drooped with bill downwards and rigid body, with the action and some of the force of a pile-driver, the lower bird holding the victim down the while. Then the bystanders intervened and rescued the stunned bird, and he was seen later in the day in a bedraggled condition, much chastened. He has been adopted by one of the staff at the station." A local name is "Jackjar." My uncle has observed Jackdaws pulling out the nests of Sparrows from the spoutings of the houses at Cullercoats to get at the eggs or young within.

CARRION-CROW (*Corvus corone*).—An uncommon winter visitant.

HOODED CROW (*C. cornix*).—An uncommon winter visitant, only passing on migration.

ROOK (*C. frugilegus*).—A common resident. Breeding in the vicinity of Holywell Dene. I have also seen them arriving on the coast in March, but only an odd bird or two.

SKY-LARK (*Alauda arvensis*).—A very common resident and migrant. I have noticed birds of this species singing while on the ground much oftener than in other districts. A light-coloured variety of this species was shot by Mr. Ewen at St. Mary's Island on April 4th, 1890, and is now in his possession. This is incorrectly termed a "Yellow Lark" in Mr. Tomlinson's book.

WOOD-LARK (*A. arborea*).—In examining some of the private notes of J. Hancock, I found that a specimen of the Wood-Lark was shot at Hartley Bates in 1876. It was shown to Mr. Hancock by Mr. H. Gemmell, of 13, Alexandria Place, Newcastle, in whose possession it then was.

SHORE-LARK (*Otocorys alpestris*).—J. Hancock, in one of his note-books, mentions that three of these birds were shot out of a flock of five by Mr. J. Robson, of Percy Street, Newcastle, on Oct. 26th, 1876, on the banks bordering Whitley Sands, near "Briar Burn." One was so much injured that it had to be thrown away.

[ALPINE SWIFT (*Cypselus melba*).]—In the middle part of November, 1910, C. Swan, Esq., of Cullercoats, when walking

along the banks at Tynemouth, saw a bird rise close before him which was undoubtedly a Swift, and had a white throat and belly, the rest of the plumage being brown. He informed my brother, and they went together to the Hancock Museum, where Mr. Swan immediately "spotted" this species as being that to which the bird he saw belonged. Although the evidence cannot be taken as quite complete where so rare a bird is concerned, yet it merits passing mention.

SWIFT (*C. apus*).—A resident in spring and autumn, breeding under the eaves of the Tynemouth Palace in small numbers, and also at Tynemouth Priory and Castle. This species is commonest in spring, when numbers arrive on the coast. The usual date of arrival is May 9th, but in the year 1908 Mr. Gill records a flock on May 1st. My brother observed one on Oct. 3rd; in 1903, on the same date, he observed a Fieldfare, and it is not often these two are seen on the same date.

NIGHTJAR (*Caprimulgus europaeus*).—An uncommon spring and autumn migrant. Mr. Richardson informs me that there is one shot practically every season. I know of occurrences in 1904, and August, 1910.

WRYNECK (*Iynx torquilla*).—A very rare spring and autumn migrant. The only specimen I can find a record of was one shot by J. Hancock in the autumn of 1833 at St. Mary's Island.

GREAT SPOTTED WOODPECKER (*Dendrocopos major*).—A rare autumn visitant; one was seen on the farm of F. Wilson, Esq., Cullercoats, between Sept. 30th and Oct. 16th, 1903, and very frequently observed pecking at an old gate-post. Another was shot at Holywell Dene in 1904, and was set up by Mr. Richardson, of Seaton Delaval. Another was observed by the park-keeper and Noel Leeson, Esq., on several occasions, some time in January, 1910, at Tynemouth Park. It flew to and fro between Shields and Tynemouth Parks for several days. It was very tame, and allowed a close approach.

KINGFISHER (*Alcedo ispida*).—Occasionally met with in severe winters on the coast, and probably bred formerly in Holywell Dene, where it is generally to be met with now in winter. In his 'Scraps about Birds' Adamson mentions one that was killed at Hartley during the severe winter of 1844-5. It had been driven

to the seaweed-covered rocks and pools to feed at low tide. The slaughter that was carried on among these birds yearly is incredible. Mr. Richardson, of Holywell, tells me that during the year 1896 he had fifty birds to set up which had been shot in the district. A local taxidermist informed me once that he never had the "satisfaction of shootin' one o' them bonnie bords." Where the satisfaction comes in it is hard to conceive.

ROLLER (*Coracias garrulus*). — A specimen is recorded by J. Hancock as shot "some years ago near Earsdon," probably about 1854.

HOPOE (*Upupa epops*). — An extremely rare visitant in September, of which I have but two definite records. One which is mentioned by J. Hancock was shot on the coast between Cullercoats and Whitley on the coronation day of King William IV., Sept. 4th, 1831, by Thomas Harvey, in company with J. Hancock. This bird was only winged, and Hancock says he had the opportunity of seeing it alive, and of observing how the feathers on the crest were arranged when erected. This specimen is an adult male, and is in the Hancock Museum. A second example was shot by Mr. Ewen at St. Mary's Island on Sept. 30th, 1878, and is in his possession. It was stuffed by Bates, of Newcastle-on-Tyne. Mr. Hancock once informed my grandmother, the late Mrs. T. Vaughan, that one day, while walking on the banks at Cullercoats, he had flushed five birds, which flew straight away, and proved to be Hoopoes. I should probably say that this would be on the occasion that the bird he mentions was shot.

CUCKOO (*Cuculus canorus*). — An occasional visitant on migration in spring and autumn. A bird of this species was caught in the 'Huddleston Arms Hotel,' Cullercoats, while it was being repaired, about 1897. It had probably just arrived, and was much exhausted. This species seems to wander south early in summer, as my uncle observed several passing down the coast between June 20th and 25th, 1911, during the prevalence of north-east gales.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

The Lesser Shrew in Yorkshire.—Referring to Mr. George Bolam's note (*ante*, p. 276), I think it wise to add a few words on the status of this small mammal, lest it may be considered to be much more numerous in this district than it really is. Although Mr. Bolam may have taken "upwards of a dozen" specimens during the last two years in the neighbourhood of Ilkley by persistent and often by almost daily trapping, it is really a rare animal here, more especially compared with the extreme abundance of its congener, the Common Shrew, or even with the Water Shrew. I can state this from my own experience, both in Wharfedale and in Airedale; in fact, I gave up systematic trapping chiefly from the havoc I wrought amongst the innocent Common Shrews. It became nauseous to me to turn out two or three of their dead bodies each time that I visited my traps, and I only took one Lesser Shrew during the whole time. For the past eighteen months Mr. Bolam has promised to catch a Lesser Shrew for me, but has only sent in such common things as Field-Mice, Voles, and Shrews, although I am aware that he has sent three Lesser Shrews to the Keighley Museum during that time. Mr. Bolam is scarcely accurate in saying that previously only a single specimen had been obtained in the "immediate neighbourhood of Ilkley" (*viz.* at Bolton Abbey, six miles away), because during the last three years I have examined specimens from Addingham and from Denton, neither place being more than two miles from Ilkley.—H. B. BOOTH (Ben Rhydding).

AVES.

Swallow's Curious Nest.—On July 24th I was punting up Speeney, a tributary of the old River Chelmer (now Chelmer and Blackwater Navigation), between Beeleigh and Ricketts Locks, with my son and daughter, when I found a nest in the outside branch of a pendent maple-tree hanging over mid-stream, over twenty feet from each bank. It looked like that of a Thrush, but I was surprised to find in it four Swallow's eggs of the usual spotted type, and both parent

Swallows were flying round, crying loudly. The nest was of the usual hard mud, lined with fine hay and feathers, quite round and deeply cup-shaped. There is no building within a radius of six hundred yards. When my two sons went to photograph the nest on August 5th there were four young birds in the nest, doubtless the second brood. This abnormal nest greatly resembles the vignette in Yarreil's 'History of British Birds' of one in a sycamore overhanging a pond at Penshurst, eighty years ago.—EDWARD A. FITCH (Maldon, Essex).

Decrease of the Corn-Crake and its Cause.—The present summer must be reckoned a "Corn-Crake Year" for Lancashire, at least, for there the birds are commoner than I have known them for many seasons; at Tandle Hill, between Middleton and Rochdale, I noticed five in ear-shot at once within a radius of a hundred yards on June 19th. Seeböhm says that Corn-Crakes are most numerous in wet seasons, but this is certainly not true for the present summer. Three-quarters of a century ago Dr. Skaife discussed (Mag. Nat. Hist. 1838) the well-known fluctuations of the Corn-Crake in Lancashire, and the question has occupied subsequent students in that county, as readers of Mitchell's 'Birds of Lancashire' will remember. I have elsewhere ('Lancashire Naturalist,' vol. iii. 286-287) offered an explanation that may be repeated here: in such places as the wilder parts of North Wales or the Lake District, where the bird is extremely abundant, the breeding grounds are frequently rough pastures that serve as admirable nurseries for the young. In haymaking districts like South Lancashire successful broods are rare, for the mowers invariably find and usually destroy the nests, and, as the Corn-Crake is a most unfortunate bird on migration, it is easy to understand how a local colony may become more than decimated, and a district lose nearly all its Corn-Crakes until a fresh stock is crowded in from the more favourable breeding grounds in other localities. I think I am correct in saying that "Corn-Crake Years" are purely local phenomena, and, although the birds are numerous now in Lancashire and Eastern Cheshire, it would not be safe to say that they are abundant in all other breeding counties.

This curious annual fluctuation has little to do with the disappearance of the Corn-Crake from the south-eastern counties of England. During the past two or three summers I have visited many parts of Essex, Middlesex, Herts, Bucks, Surrey, Kent, and Sussex, where it has been my luck not to hear a single bird, and I feel emboldened to add that the species is *quite* non-existent in summer

throughout the southern half of Essex. The literature of natural history abounds with notes relating to this state of affairs, but I shall content myself by saying that the contributors to the British Ornithologists' Union Report on Migration for the year 1907 are unable to record the Corn-Crake for Hants, Sussex, Middlesex, Bucks, Herts, Essex, and Suffolk—counties where in former years the bird was well known and even abundant. This deplorable change—although, indeed, some writers have commented as past victims of the sleep-disturbing voice of the bird, and have not mourned its passing—appears to date from about 1850, although the diminution was not generally noticed until a decade later. This alteration in the distribution of the bird can be, I think, ascribed to the change in agricultural methods that marked the early half of last century. I have no personal recollection of hearing a Corn-Crake actually in a corn-field. I have seen them driven out of the stuff at harvest time, but it has not been my experience to notice one in the breeding season in association with such a flora. I have met with them in marshes and in fields of rye, but not in wheat, barley, or oats. In many parts of the North of England "Corn-Crake" is not the native name, and if Rail or Land-Rail is not used one generally hears the creature spoken of as "Grass Crake" (with the puzzling pronunciation *Grey Shrake*), "Grass Drake," or "Draker Hen"; and Mitchell gives the additional "Daker Hen" and "Draken Hen" for parts of Lancashire. Here the bird is a true "Grass" Crake, and not a "Corn" Crake, and I fancy we have in these names a hint at a solution of the problem.

If I have read the local ornithologists aright, the Corn-Crake formerly bred in the corn-fields of the southern counties. It does not do so now, because a modern corn-field is in many ways unfitted to be the home of breeding Corn-Crakes. Those who have watched or otherwise observed the quick and restless movements of the male bird can easily imagine its discomfort in a field lined with barriers of corn-stalks. To a man the corn-field of to-day may appear a safe jungle, but a child or a Weasel knows that it is really as transparent as a hop-garden. The Corn-Crake, above most birds, requires secrecy, and in a drilled corn-field this is not available. The nest could never be hidden, and the eggs or even the sitting bird would soon fall the prey of Stoat, Weasel, Rat, Hedgehog, Jay, or Crow. Under the old conditions of broadcast sowing the corn-field would be a real sanctuary, but I am unable to say of my own experience if the bird does actually nest in fields of corn where the drill has not been used,

for when I had the opportunity of investigating this point I had never thought of the matter in the present light. But here, no doubt, some other reader of 'The Zoologist' can supply an observation or two.

It seems to me that the Corn-Crake has disappeared from our southern counties because the drill has made the corn-fields quite untenable as nesting grounds, and as the meadows are unsafe for another reason, and the proportion of suitable pasture fields is inadequate as a reservoir (as I have explained in relation to the Lancashire stock), the bird has practically vanished from the avifauna as a nesting species.

I should like to add a little postscript, but I am tempted to make it a long one! The Corn-Crake says "crex, crex" about sixty-five times a minute, and will often keep it up for many minutes at a stretch. Once I decided to count how many times a bird uttered its note without a break, but after counting up to five hundred I got tired of the monotonous task and gave it up. I could hear it as I went upstairs to bed, and I reckoned it uttered at least two thousand consecutive calls before lulling me to sleep. A careful account of the physiology of the vocal organs of the Corn-Crake would be a valuable addition to the literature of birds.—FREDK. J. STUBBS.

Kite in Scotland, and other Notes.—I am very pleased to say that this rare bird can still be seen about fifteen miles from this town. On June 18th I had the great pleasure of seeing a very fine specimen. This bird has been observed by several people, but recently always alone, so I fear it has lost its mate. It is known that a gamekeeper fired at a Kite in April, but the shepherd tells me that he missed on that occasion. I have seen the keeper, and he says he is aware the bird chiefly feeds on young rabbits, and that he does not molest it. Still, it is strange how they have diminished in numbers. The "Gled," as it is locally called, came here about six years ago, and at first succeeded in rearing young. After that two pairs could be seen flying about, but in two recent expeditions I have only succeeded in viewing one bird. The Buzzard is unknown in this district, but the Peregrine can still be seen, despite the most shameful treatment meted out to it by six gamekeepers always on the watch. A pair nested on the Basta (or Bastard) Rock in May, but the keeper shot both old birds and destroyed the young. He also raked a Raven's nest near the same place, but failed to destroy the old birds. I have seen several Ravens about, but know of no nests. Another pair of Falcons nested on the west coast of Kintyre. I saw the two remain-

ing eggs, but one young one just born died as the keeper shot the female. The tiercel then disappeared, but was back again in two days with a fresh partner. I saw these two fine birds. The question is: Where do the Falcons go for their second partners? The local people say Ireland, as they seem to think the Kintyre birds have communication with the Irish. The second pair I saw were wild, and had not then commenced to nest. No Peregrine nested at the Mull this year, although two did last year. The keeper could not get at them, but he adopted this very effectual means of frightening them away: he put a dummy man on a pole and hung it over the nest. The birds deserted. The Merlin is now rare, or comparatively so, in this district. I know of two pairs which were destroyed. One had six young, which also paid the penalty. We have two Terneries close by. The graceful little birds can be seen flying about and diving in Campbeltown Loch and at Machrihanish throughout the summer. An Osprey was seen flying over Castlehill Loch here last spring, and managed to escape, and two years ago a Hen-Harrier in the brown plumage was trapped on the Laggan, just above Machrihanish Golf Links.—H. P. Q. CLEAVE (Campbeltown, N.B.).

Notes on Nest-Boxes.—We have had during the past year in our nest-boxes, &c., the Great Tit, Blue Tit (several of each), Coal Tit (one), Nuthatch (one), Tree-Sparrow (many), House-Sparrow, Starling, Tawny Owl, and Stock-Dove (several). The first nest of the Nuthatch was spoiled by Tree-Sparrows after the first egg was laid, but the birds built again in another box. The Tawny Owls returned to the church-tower for the fifth year in succession, but only two eggs were laid, of which one was addled. After the owlet had gone I found a Mole in the nest. Another pair used a nest-box close to the house, and reared a brood of three. One of the owlets after leaving the box sat for a whole day almost motionless on a low bough of an adjoining yew. I have not seen a Redstart or heard a Wryneck this year, but Nightingales have been very abundant. Other summer migrants have returned in about their usual numbers. On July 12th I put up a Nightjar from the sand near Southwold, not more than a hundred yards from high-water mark, and found two half-grown young. There are many acres of bracken, &c., close by, and it is, I suppose, possible that the bird may have been disturbed, and moved either her eggs or small young to another place. On this subject Mr. Norgate has some interesting remarks in a Nightjar article in 'The Zoologist' for 1884 (p. 89). The only Cuckoo's egg I have seen this year was one I found with no other egg in a Robin's nest in an

ivy-wall on May 24th. Two days before the nest had contained one Robin's egg, and, as the owner seemed to have deserted, I took the Cuckoo's egg, which was a very good example of the dark brown type. Four days after the Robin returned, laid four more eggs, and hatched them off safely.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

A Protest.—Mr. W. H. Parkin, by putting the fourth line of his note (*ante*, p. 278) in inverted commas, makes it appear as if he were quoting my words. I am greatly surprised at this misrepresentation of the views I expressed.—O. V. APLIN (Bloxham, Oxon).

I AM planning a bird photography expedition for next year, and should be extremely obliged for information as to whether Iceland or Norway would be likely to give the better result in a six weeks' trip. If any readers of 'The Zoologist' care to give an opinion I should be grateful. — FRANCIS HEATHERLEY ("Endellion," Rock Ferry, Cheshire).

NOTICES OF NEW BOOKS.

Annual Report of the Board of Regents of the Smithsonian Institution for the Year ending June 30th, 1909. Washington, 1910.

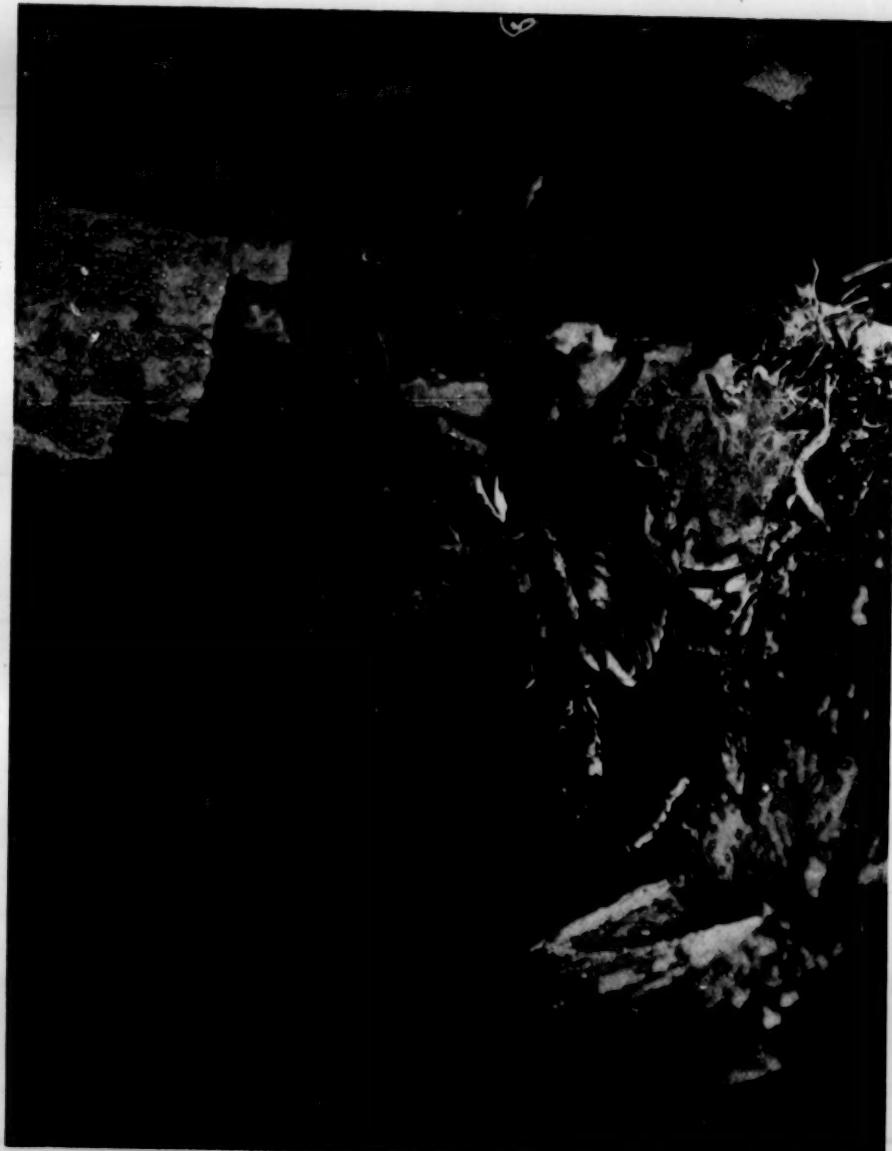
THIS annual volume has only recently reached our hands, and in its "General Appendix," or reprints of selected scientific memoirs—not a few of them translations—from many sources, and written by authors of different nationalities, are comprised several papers of great interest to zoologists. We can only mention a few of them. Prof. Glangeaud's memoir on "Albert Gaudry and the Evolution of the Animal Kingdom" is translated from the 'Revue générale des Sciences,' Paris, 1909. This great evolutionary palaeontologist and the work he did is well summarized by Prof. Glangeaud: "By the depth of the problems which he studied, by the influences which he exerted, and by his theoretical conceptions, Albert Gaudry stands with Lamarck. But he is also, in virtue of his remarkable observa-

tions, the Darwin of the vanished faunas, and his name should shine side by side with the names of these illustrious scholars." Another memoir translated from the same source is "The Instinct of Self-concealment and the Choice of Colours in the Crustacea," by Romuald Minkiewicz. The author rejects the proposed phraseology of "active variable mimicry" as being to his mind too anthropomorphic, and prefers the "new expression, instinctive synchromatism." This publication is suggestive to the last degree. Two papers of interest to speculative ornithologists are "The Origin and Development of Parasitical Habits in the Cuculidæ," by C. L. Barrett, reprinted from the 'Emu'; and "Some Remarks on the Protective Resemblance of South African Birds," by A. Haagner, reprinted from the 'Journal of the South African Ornithologists' Union.' "Recent Discoveries bearing on the Antiquity of Man in Europe," by George Grant MacCurdy, of Yale University, appears to be an original contribution—at least, no reference is made to an earlier or other publication—and is an excellent and well-illustrated *résumé* of the latest discoveries and conclusions on this vital subject. We have only mentioned these papers, but there are more appertaining to our science, and we may well welcome and value annual volumes that always draw our attention to important memoirs which might perhaps be sometimes overlooked, and, what is much more, are reprinted, and translated when necessary, in their pages.

Zoologisches Adressbuch. R. Friedländer & Sohn, Berlin.

THIS excellent world-wide directory to all recognized zoologists is a great boon, and a new edition has just been published. So far as we have seen it has been compiled with much care and accuracy, while the special study of each zoologist is given.





FEMALE RAVEN AFTER FEEDING YOUNG.